A SURVEY OF CURRENT AND EXPECTED RESEARCH NEEDS OF SMALL FARMS IN THE NORTHEASTERN REGION

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ABSTRACT

Small-scale farming enterprises in the 12-State Northeastern Region, including all management aspects of production through marketing, are now in transition. This situation is caused by economic changes impacting on their business practices. The growth and business prosperity of the region's small farms are expected to increase about 17 percent in the next 5 years, especially for farms near metropolitan areas. Extension county agents have direct, daily contacts with operators of small farms. A survey of county agents ascertained information useful for implementing immediate agricultural research and planning long-range research projects and technology to specifically benefit small-scale farms. Needed is complete utilization of the special attributes of county agents and scientists in combination. Their challenge is to identify small farms needs, develop and apply new appropriate technology, and disseminate the knowledge to enhance the well-being of the small-scale farmer.

KEYWORDS: Agricultural enterprises, agriculture, economics, extension, farmers, northeastern region, research, small-scale farms, survey, technology.

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By Howard W. Kerr, Jr.1/

The Northeastern Region encompasses 12 States. Within this region are 298 counties. One or more extension agents are in each county, and daily they are directly confronted with small farms problems unique to their particular county. With research funds limited, a survey of selected counties and associated county agents in the Northeastern Region (NER) was considered the most feasible approach for identifying and giving priority to research needs of small-scale farm operators. In addition, the structure of the Science and Education Administration (SEA) presented a unique opportunity for Agricultural Research (AR) and Extension Service (ES) to collaborate in identifying small farms needs, planning appropriate programs, and distributing research results to a segment of the agricultural community that has been overlooked for too long.

To obtain information useful for planning long-range research needs of small-scale farm operators in the Northeastern United States, I conducted a survey of 70 extension county agents. Field personnel were selected from ES as the best source for the needed information.

Choice of the counties used in the study was based on authoritative sampling. This technique requires that some individual who is well acquainted with the material draw the sample without regard to randomization. Such a procedure is completely dependent on the knowledge and skill of the sampler. In May 1979, State ES directors in NER were contacted for their sanction and support of the planned AR small farms study. To determine the counties and ultimately the county agent to be contacted, the State ES directors were asked to select approximately 25 percent of the counties in their respective States for the study. Exceptions were allowed for Delaware and Rhode Island. All three Delaware counties and three of Rhode Island's five counties were included. State ES directors designated one ES agent for each county.

In May 1979, a memorandum with questionnaire was mailed to the 70 designated ES county agents in NER, explaining the purpose of the study as well as their selection as a contact source by the State ES director. A definition of small farms operators was given to clarify the respondent's understanding of a small farm. It was based on the following factors:

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"-- Family net income from all sources (farm and nonfarm) is below the median nonmetropolitan income of the State.

-- The family is dependent on farming for a significant, though not necessarily a majority, of their income.

-- Family members provide most of the labor and management."

The survey questionnaire contained 11 questions limited to only 2 pages. Questions 1-5 on page 1 requested specific information on the agent's tenure and number of farms in the county. It was emphasized that the respondent refer to the definition of small farms operators as provided. Various agricultural enterprises were listed, and the respondents were requested to rank in order of importance the top three enterprises of all farms and of small farms in their county and to detail by commodity these enterprises. For example, if they listed berry production, they were asked to specify the berries grown; for instance, strawberries 1, raspberries 2, and blackberries 3. Two of the 6-11 questions on page 2 referred to trend data on growth of small farms in the county in the past 5 years and their expected growth or decrease in the next 5 years.

All other questions were designed to explore the respondents' knowledge of various aspects of small-scale agriculture in their counties. All were open-end questions and focused on the immediate research needs, specific directions for research endeavor, what technology would be needed 5 years from now, and how small farm operators would be affected in the next 5 years as the national economy rapidly changed because of energy shortages, tight money, and expected higher food and fiber costs. A final question requested respondents' ideas on how ES and AR could be more effective in fulfilling the future needs of small farm operators. In analyzing all open-ended questions, I had to make a subjective evaluation of the respondents' replies, and I assume full responsibility for this necessary analytical procedure. All replies were kept confidential.

In aggregate, the inservice tenure of 70 county agents responding to the survey questionnaire was 991 years. Actual years of service ranged from 1 to 33 years. As shown in the following data, 19 of the respondents had 5 years or less of service in the county for which they were reporting, 43 had 11 or more years, and the average was more than 14 years:

Years	Respondents
5 or less	19
6 - 10	8
11 - 15	12
16 - 20	10
21 - 25	13
26 or more	8

Over 55 million people live in the 12 NER States and the land area comprises 206,168 square miles. These States vary in area, number of counties, and population (table 1). Some counties have high populations because they

Table 1.--Population, area, counties, and farms in 12 NER States

State	Population (1970 census)	Area (sq. miles)	Counties	Counties surveyed	Farms		
					Small	Other than small	Aggregate
Connecticut	3,032,217	5,009	8	4	475	1,275	1,750
Delaware	548,104	2,057	3	3	502	2,990	3,492
Maine	993,722	33,215	16	4	995	1,129	2,124
Maryland	3,923,897	10,577	23	6	1,365	2,924	4,289
Massachusetts	5,689,170	8,257	14	3	550	570	1,120
New Hampshire	737,681	9,304	10	3	435	218	653
New Jersey	7,171,112	7,836	21	4	776	1,586	2,362
New York	18,241,584	49,576	62	13	4,050	6,890	10,940
Pennsylvania	11,800,766	45,333	67	12	5,214	6,088	11,302
Rhode Island	949,723	1,214	5	3	251	143	394
Vermont	444,732	9,609	14	4	475	1,230	1,705
West Virginia	1,744,237	24,181	55	11	4,805	2,655	7,460
Total	55,276,945	206,168	298	70	19,893	27,698	47,591

are near urban or metropolitan areas, whereas others have relatively sparse populations.

Rural counties with agricultural economies have a mix of both small- and large-scale agricultural entrepreneurs. Farm income is generally the major source of gross income for large-scale and often small-scale farmers; however, the latter often work part time off the farm or a member of the family does. The number of large-scale farms in urban counties is declining because of urban sprawl. Their owners are often nonfarmers who are speculating on increasing land values.

The problems faced by small farms operators in any vast region such as the NER are many and different. Even by State they are different but are more in focus than when viewed regionally. At the county level, problems vary from farm to farm, but generally such factors as the soil, annual rainfall, elevation, and proximity to populated or unpopulated areas will dictate the agricultural enterprises.

Aggregate farms in the surveyed 70 counties of 12 NER States were 47,591. Farms meeting the definition of a small farm totaled 19,893 (approximately 42 percent), whereas 27,698 (approximately 58 percent) did not. Proportionate to total farms, New Hampshire, West Virginia, and Rhode Island each had more than 60 percent of small farms. Delaware had the lowest with only 14 percent followed by Connecticut with 27 percent.

AGRICULTURAL ENTERPRISES OF NER FARMS

Resources and economic conditions determine the size of a farm, and the size and location of the farm complex often determine its major enterprise. Any NER county or State has both small and large operations with various agricultural enterprises. In the counties surveyed, respondents ranked in order of importance from a list of various agricultural enterprises the three most important enterprises for small farms and farms other than small in their particular county.

All respondents completed the requested information. Theoretically any agricultural enterprise could have been ranked 70 times--once either first or second or third by each respondent. In aggregate, 210 agricultural enterprises (70 respondents by 3 rankings) were identified for each category of small and other than small farms (table 2).

In order of importance, the five agricultural enterprises of NER small farms most frequently ranked by the respondents were vegetable crops, beef cattle, forage crops, dairy, and sheep and goats. The enterprises of farms other than small in order of importance were dairy, forage crops, beef cattle, vegetable crops, and grain crops.

The significance of targeting limited research funds to agricultural enterprises most associated with small farms is also revealed in table 2. The ratio of small to large farms engaged in vegetable enterprises 2:1, berry production 4:1, and sheep and goats 4:1 indicates small farms managers realize potentially greater benefits from agricultural research efforts directed to

Table 2.--Agricultural enterprises of farms in 70 NER counties

Enterprise	Small farms	Other than small farms
Beef cattle	37	27
Bees and honey	1	---
Berry production	8	2
Broilers	4	8
Dairy	21	55
Forage crops	31	29
Forest products	10	13
Grain crops	10	16
Greenhouse and nursery	10	8
Poultry and eggs	3	10
Sheep and goats	18	5
Tree fruit or nuts	5	11
Vegetable crops	43	20
Other1/	9	6
Total	210	210

1/ Includes horses, swine, tobacco, grapes, and maple sirup.

these areas than do large farms operators in identical enterprises. Conversely, large farms operators realize more benefits from research efforts directed to broilers 2:1, poultry and eggs 3:1, dairy nearly 3:1, and tree fruit or nuts 2:1 than do small farms managers in similar enterprises.

Forage crops are apparently very important to both small and large NER dairy and livestock enterprises. Forage production is the necessary component input to any dairy operation and dairying is an important enterprise of NER farms, especially large farms. On small farms, forage production likewise complements beef, sheep, and goat enterprises as well as dairy operations.

Table 3 shows the agricultural enterprises in order of importance to small farms and farms other than small, including commodities generating the highest cash receipts in the NER States. Comparisons of the rankings under all farms by cash receipts and other than small farms indicate they are similar and thus substantiate the validity of the information obtained by a sample procedure. Comparisons of the rankings under small farms and other than small farms, as suspected, are dissimilar. Vegetable production was the major enterprise on NER farms and ranked first in eight States and third in another State. In the NER States where vegetables were not ranked as a major small farms enterprise, livestock and forage were the most frequently reported. The major enterprises on other than small farms were dairy, grain, forage, broilers, and eggs. Comparisons of the information for small farms and other than

Table 3.--Agricultural enterprises in order of importance to farms in 12 NER States, including commodities with highest cash receipts in 1978[1/]

State	Small farms enterprise rank			Other than small farms enterprise rank			All farms by cash receipts enterprise rank		
	1	2	3	1	2	3	1	2	3
Conn.	Vegetable--	Forage-----	Berry------	Dairy------	Eggs-------	Greenhouse, nursery.	Dairy------	Eggs-------	Greenhouse, nursery.
Del.	Grain------	Broilers---	Vegetable--	Grain------	Broilers---	Dairy------	Broilers---	Soybeans---	Corn.
Maine	Vegetable--	Beef-------	Dairy------	Dairy------	----do-----	Eggs-------	Eggs-------	Broilers---	Potatoes.
Md.	----do-----	Grain------	----do-----	Grain------	Dairy------	Broilers---	Broilers---	Dairy------	Corn.
Mass.	----do-----	Dairy------	Beef-------	Dairy------	Vegetable--	Beef-------	Dairy------	Greenhouse, nursery.	Cranberries.
N.H.	----do-----	Berry------	Greenhouse, nursery.	----do-----	Forage-----	Forest-----	----do-----	Eggs-------	Beef.
N.J.	----do-----	Greenhouse, nursery.	Berry------	Grain------	Vegetable--	Dairy------	----do-----	Greenhouse, nursery.	Soybeans.
N.Y.	Dairy------	Beef-------	Forage-----	Dairy------	Forage-----	Grain------	----do-----	Beef-------	Greenhouse, nursery.
Pa.	Beef-------	Dairy------	----do-----	----do-----	Beef-------	Forage-----	----do-----	----do-----	Mushrooms.
R.I.	Vegetable--	Greenhouse, nursery.	Beef-------	Vegetable--	Dairy------	Eggs-------	Greenhouse, nursery.	Dairy------	Potatoes.
Vt.	----do-----	Sheep, goats.	Dairy------	Dairy------	Forest-----	Tree fruit.	Dairy------	Beef-------	Eggs.
W. Va.	Beef-------	Forage-----	Sheep, goats.	Beef-------	Forage-----	Dairy------	Beef-------	Dairy------	Apples.

1/ U.S. Dept. Agr. Statis. Bul. 627, sup., p. 10. 1980.

small farms indicate berries, sheep and goats, and greenhouse and nursery are also important enterprises of NER small farms in contrast to large farming operations.

An interesting observation is the data relative to all Delaware counties. Grain was ranked as the most important enterprise of both small and other than small farms by respondents followed by broilers. Vegetables ranked third for small-scale farmers, whereas dairy ranked third for large-scale farmers. A comparison of Delaware cash receipts by enterprise reveals broilers were first followed by soybeans and corn. Assuming corn and soybean receipts were combined and identified as grain, most likely grain would surpass broilers, and then the first and second enterprise rankings of Delaware small farms, other than small farms, and all farms by cash receipts would be identical.

Generally underpinning the various agricultural enterprises is a mix of commodities grown or produced by the small farms operator. By identifying the mix that constitutes the enterprise and establishing a value for each commodity, the precedence and ranking importance to the enterprise can be ascertained.

Table 4 shows a composite of all agricultural enterprises of NER small farms operators reported by the respondents. Also, the commodities grown or produced that constitute each enterprise are ranked by actual times reported by respondents. The weighted value was obtained by totaling the reported numerical values (1st = 3, 2d = 2, and 3d = 1) of commodities for each enterprise. Average weight of the commodity to the enterprise was ascertained by dividing the aggregate weighted values by the total number of times the commodity was reported. The average weight may tend to be biased upward because not all respondents provided a complete breakdown of commodities into three specific ratings.

Cow and calf herds dominate NER small farms beef enterprises. Feeder calves are of secondary importance. Fattening cattle and raising heifer replacements (sometimes dairy) are of relatively equal importance on beef cattle small farms.

Since the function of dairy enterprises is milk production, milk cows and raising heifers for milk cow replacements constitute the typical dairy enterprise.

Market lambs and wool are the major functions of sheep and goat farmers. Dairy goats are maintained for milk production.

Forage crops support all these livestock and dairy enterprises. Hay is significantly the major commodity and silage and pasture are of relatively equal importance.

Corn is the most important grain crop of small farms, soybeans and wheat are secondary and of equal value, and oats and barley are of minor importance.

As would be expected, broiler and egg production are the principal functions of the broiler and the poultry and egg small farms operators.

Table 4.--Enterprises of NER small farms with 3 rankings of specific commodities

Enterprise	Rank	Commodity	Actual	Weighted	Average weight
Beef cattle----------	1	Cows, calves--------	18	54	3.0
	2	Feeder calves-------	12	31	2.6
	3	Fat cattle----------	11	20	1.8
	4	Beef and dairy heifers.	10	21	2.1
	5	Cull cows-----------	4	4	1.0
	6	Other---------------	5	---	---
Bees and honey (only 1 response, therefore not disclosed).					
Berry production--------	1	Strawberries--------	7	17	2.4
	2	Blueberries---------	6	12	2.0
	3	Raspberries---------	4	6	1.5
	4	Cranberries---------	1	2	2.0
Broilers----------	1	Broilers------------	4	12	3.0
	2	Layers--------------	1	2	2.0
	3	Pullets-------------	1	1	1.0
Dairy cattle------------	1	Milk cows-----------	16	48	3.0
	2	Heifers-------------	11	20	1.8
	3	Cull cows-----------	3	5	1.7
	4	Other---------------	2	4	2.0
Forage crops------------	1	Hay-----------------	42	92	2.2
	2	Silage--------------	13	27	2.0
	3	Pasture-------------	13	24	1.8
	4	Other---------------	1	---	---
Forest products---------	1	Saw timber----------	7	14	2.0
	2	Firewood------------	5	13	2.6
	3	Christmas trees-----	3	4	1.3
	4	Pulpwood------------	2	5	2.5
	5	Other---------------	1	---	---
Grain crops------------	1	Corn----------------	10	29	2.9
	2	Soybeans------------	5	11	2.2
	3	Wheat---------------	5	10	2.0
	4	Oats----------------	4	6	1.5
	5	Barley--------------	4	5	1.2

Table 4.--Enterprises of NER small farms with 3 rankings of specific commodities--Continued

Enterprise	Rank	Commodity	Actual	Weighted	Average weight
Greenhouse and nursery.	1	Vegetable and bedding.	11	28	2.5
	2	Holiday and potted--	4	5	1.3
	3	Annuals and perennials.	3	5	1.7
	4	Ornamentals and nursery.	2	5	2.5
Poultry and eggs--------	1	Eggs----------	3	9	3.0
	2	Pullets----------	1	2	2.0
	3	Turkeys----------	1	1	1.0
Sheep and goats---------	1	Market lambs--------	12	32	2.7
	2	Wool----------	11	25	2.3
	3	Milk----------	2	4	2.0
	4	Breeding stock------	1	1	1.0
Tree fruit or nuts------	1	Apples----------	5	15	3.0
	2	Peaches----------	3	5	1.7
	3	Pears----------	2	2	1.0
	4	Other----------	2	---	---
Vegetable crops---------	1	Tomatoes----------	32	79	2.5
	2	Sweet corn----------	25	64	2.6
	3	Green beans---------	10	17	1.7
	4	Vine crops----------	8	13	1.6
	5	Root crops----------	3	6	2.0
	6	Squash----------	3	4	1.3
	7	Cole crops----------	3	3	1.0
	8	Mixed----------	10	26	2.6
	9	Other----------	6	---	---
Other-------------------	1	Swine----------	4	11	2.8
	2	Grapes----------	2	6	3.0
	3	Tobacco----------	1	3	3.0
	4	Horses----------	1	3	3.0
	5	Maple sirup---------	1	3	3.0

Forest enterprises are a conglomerate of many different commodities on small farms. Saw timber is a major commodity, but firewood is also very important to the enterprise. Christmas trees and pulpwood are less important.

Vegetable and bedding plants are the most important commodity of greenhouse and nursery operators. Production of holiday plants, annuals and perennials, and ornamentals is of less but relatively equal importance.

Apples are the important tree fruit commodity followed by peaches. Strawberries are the important commodity on berry small farms closely followed by blueberries, with raspberries and cranberries of minor importance.

Numerous vegetables were identified as grown on NER small farms. The most important, however, were tomatoes and sweet corn. Green beans and such vine crops as melons and cucumbers are likewise important but produced on fewer farms. Since some respondents listed mixed vegetables, a specific vegetable could not be identified.

In the other category, swine and grapes were also identified as important commodities on NER small farms.

In Summary.--The agricultural enterprise vocations of small and large farms in most NER States are different. Operators of small farms frequently produce vegetables and berries for direct sale. They are more likely to maintain sheep and goat herds than large farms operators and many have cow and calf herds as a major agricultural enterprise. Small and large farms operators of livestock and dairy enterprises are both very dependent on forage crops. Generally large farms have highly capitalized enterprises, such as broilers, poultry and eggs, and operations where cash flows are not quickly established, i.e., fruit and nut trees.

The interpretations reported here do not eliminate the need for additional studies to better understand the mix of commodities produced or grown on NER small farms. However, delineation of the information is useful for planning more detailed field investigations and also for indicating the commodities makeup to be expected on typical NER small farms.

EXPECTED GROWTH OF SMALL FARMS

The respondents were asked to estimate the percent gain or loss of small farms in their county during the past 5 and next 5 years.

For the past 5 years, 41 respondents indicated an increase in small farms in their counties, 21 a decrease, and 8 no change (table 5). Approximately two out of every three counties surveyed had a gain in the number of small farms in the past 5 years as did two or more county agents in each NER State. The average increase was 16 percent. Respondents in five States reported a decrease, averaging also 16 percent. Proportionately the counties surveyed in New York and Pennsylvania had the greatest decline of small farms in the NER.

Table 5.--Respondents' estimates of past and future numbers of small farms in 70 NER counties, by State

State	Estimates that in past 5 years small farms have--					Estimates that in next 5 years small farms will have--				
	Increased		Decreased		No change	Increased		Decreased		No change
	Number	Percent	Number	Percent	Number	Number	Percent	Number	Percent	Number
Connecticut	3	12	1	10	---	2	18	2	10	---
Delaware	2	8	---	---	1	1	5	---	---	2
Maine	4	10	---	---	---	3	10	---	---	1
Maryland	3	7	2	35	1	4	8	2	23	---
Massachusetts	3	43	---	---	---	3	48	---	---	---
New Hampshire	3	32	---	---	---	3	25	---	---	---
New Jersey	3	23	---	---	1	3	38	---	---	1
New York	3	22	6	10	4	4	19	7	14	2
Pennsylvania	4	8	8	20	---	3	8	8	15	1
Rhode Island	3	24	---	---	---	3	25	---	---	---
Vermont	4	10	---	---	---	4	7	---	---	---
West Virginia	6	9	4	12	1	7	8	4	11	---
Total or average	41	16	21	16	8	40	17	23	14	7

In the next 5 years, 40 respondents indicated an expected increase in small farms, 23 a decrease, and 7 no change. The average increase will be about 17 percent and the decrease about 14 percent. Approximately two out of three New York and Pennsylvania counties will have a decline in small farms.

During the next 5 years, changes in the economy will affect all farms. Energy shortages, reduced travel, and increased food and fiber costs are but a few of the expected changes. For some small farms operators, these changes will be beneficial; for others, they will cause failure.

Respondents were requested to describe how small farms in their respective counties would be affected by economic change. Sixty-eight of the seventy respondents replied to the question. Since this was an open-ended question, I subjectively interpreted and identified each reply as either positive (favorable) or negative (unfavorable) regarding the future well-being of small farms operators. Thirty-five of the replies were identified as positive, 29 negative, and 6 undetermined or none (table 6).

Table 6.--Interpreted and identified respondents' replies to economic change in 12 NER States in next 5 years1/

State	Positive or favorable	Negative or unfavorable	Undetermined or none
Connecticut	3	1	---
Delaware	1	1	1
Maine	4	---	---
Maryland	3	2	1
Massachusetts	3	---	---
New Hampshire	2	---	1
New Jersey	1	3	---
New York	5	6	2
Pennsylvania	4	7	1
Rhode Island	3	---	---
Vermont	3	1	---
West Virginia	3	8	---
Total	35	29	6

1/ Includes energy shortages, reduced travel, and increased food and fiber costs.

With the exception of Delaware, where respondents' replies were equally distributed, the replies in seven States were identified as more positive than negative and conversely in four States more negative than positive. Changes in the economy will adversely affect small farms in New Jersey, New York,

Pennsylvania, and West Virginia. With the exception of New Jersey, where expected shifts in land use from farming to real estate and housing will increase rapidly as people seek locations closer to metropolitan areas, the negative or unfavorable outlook is directed to remote locations. West Virginia and western sectors of New York and Pennsylvania are relatively rural and void of major metropolitan areas, and small farms, particularly dairy farms, in these areas will be adversely affected by future economic changes.

Rural dairy farmers will experience added costs to have milk hauled, and some small-scale operators may be abandoned by milk haulers, who will favor large producers with higher daily production or on-the-farm storage capacity for alternate day pickup. The numbers of small dairy farmers may be further reduced as debt loads increase rapidly in order to finance new capital requirements. In the future, any dairy business with less than 30 milk cows is probably in jeopardy.

Beef cattle also are an important agricultural enterprise on many small farms in New York, Pennsylvania, and West Virginia. The respondents' replies relative to these small farms showed a more favorable outlook. They indicated beef cattle producers are presently receiving favorable prices where herds are established. Indications are they will continue in the cow-calf business and some may even increase herd size provided adequate land and forage resources are available and prices do not drop rapidly and significantly.

The replies of many respondents revealed a negative outlook that energy will probably be allocated first to commercial farms and that small farms will not be adequately recognized. In rural counties, some part-time farmers now drive 50 or more miles to work and transportation costs are becoming prohibitive. This hardship will cause some small farms operators to abandon their farms and move closer to part-time or potential full-time work. As this situation occurs, more of their acreage will be rented or sold.

With the exception of New Jersey, the future for small farms is generally favorable in States where farms are close to metropolitan areas with concentrated populations, such as Connecticut, Maryland, Massachusetts, New Hampshire, Rhode Island, and Vermont. Small farms operators in these States are most frequently engaged in such horticultural enterprises as vegetables, berries, and tree fruits. Most horticultural crops are unique for pick-your-own operations and likewise other forms of direct marketing, roadside markets, and urban center farmers markets. Positive statements of the respondents targeted on the following themes: Increased food costs will favor the farmer who grows and sells food crops directly; increased demand for locally grown vegetables and fruits will give small farmers a competitive marketing advantage; and importance of local production will increase dramatically, with smaller, efficient neighborhood farms thriving on maximum sales opportunities.

Although costs of farm inputs will increase faster than prices received for farm products, more small farms operators will try to meet subsistent needs by adding combined enterprises. Also, while income-making opportunities are expanded, these operators will need new market outlets, not just Saturday morning farmers markets in urban areas.

In Summary.--By 1984, the number of small farms is expected to increase in approximately two of every three NER counties. In aggregate, this increase will be approximately 17 percent. Growth will occur most likely in counties with or close to major urban areas; small farms in the hinterland will continue to disappear.

In aggregate, as small farms operators are confronted with energy shortages, higher input costs, reduced travel, and increasing food and fiber costs, they will have to become more efficient by starting to manage their farms for profit or else they will be out.

IMMEDIATE RESEARCH EFFORTS TO ENHANCE SMALL FARMS

The survival of most small-scale agricultural operations is dependent on the farm operator's ability to generate from the farm enterprises adequate annual earnings, which are often the main source of family income. Yet frequently the income of the small farms family has to be augmented by part-time or off-the-farm employment by one or more members of the family. With rapidly changing economic conditions and escalating production costs, NER small farms operators must either further increase off-the-farm work time for additional income or modify their small farms enterprise in some way to make it generate greater income or do both.

Respondents were requested to list immediate research that might enhance small farms in their county. Sixty-nine of the seventy respondents offered 133 suggestions in 8 areas where research was needed (table 7).

Table 7.--Interpreted respondents' suggestions for areas of immediate research to enhance NER small farms

Areas for immediate research	Suggestions	
	Number	Percent
Production	37	27.8
Management	30	22.6
Marketing	24	18.0
Economics	16	12.0
Disease and pest control	9	6.8
Equipment	6	4.5
Quality and preservation	2	1.5
Energy	2	1.5
Other	7	5.3
Total	133	100.0

Small farms need immediate research to assist their production capabilities. Suggestions relating to production were given 37 times or 27.8 percent of the aggregate. Further evaluation revealed that 21 of the 37 suggestions pertained to horticulture (15 vegetable and 6 fruits and berries), 12 to livestock, and 4 to forage research needs. Some small farms operators apparently have excellent management skills, whereas many lack even basic skills. Respondents' suggestions for management research totaled 30 or 22.6 percent of the aggregate. Suggestions for immediate research in production, management, and marketing were more than 68 percent of all given. For the other research areas, see table 7.

SPECIFIC RESEARCH NEEDS OF SMALL FARMS OPERATORS

Respondents also were requested to identify specific immediate needs within the identified general research areas to assist small farms.

Production

Research specifically directed to vegetable, berry, and tree fruit crops was frequently mentioned. Respondents indicated that small farms producers of vegetable crops want new plant varieties that will enable them to market crops earlier and that will lengthen the growing season. Plants more tolerant to such stress factors as exposure to light frost or cold weather, drought, pollution, and compacted soils would benefit small-scale producers. Specific research to develop vegetables with more flavor and eye appeal is needed because most of the vegetables small farmers produce go into fresh market outlets.

More NER farmers are growing their own vegetable transplants. Research on growing vegetable transplants should be emphasized, especially for tomatoes, melons, peppers, lettuce, and cabbage. Work is needed to evaluate various artificial media components, such as peat, vermiculite, and other soil substitutes. Fertilizer and minor element work is needed to grow the best highest yielding transplants in the shortest time.

The nutrient film technique of growing vegetables in a nutrient solution may offer possibilities for small vegetable farms, and research should be implemented to determine feasibility and problems. This technique, although primarily used in greenhouses, could also be used outdoors.

Intensive vegetable production systems for up to four crops per year on the same parcel of ground should be developed. Planting schedules relative to these systems and cultural practices are also needed as well as "fact books" on production inputs researched for small-scale operations.

Berries and tree fruit produced on small farms also are generally sold fresh; therefore, research directed to developing varieties with improved flavor and eye appeal would be of benefit. Immediate research aimed at improving cultural practices to reduce labor requirements for small-scale berry production and maintenance was suggested.

New production systems focusing on more efficient total operations for small-scale beef, sheep, and swine farms were frequently mentioned. Small-scale livestock and dairy producers need greater access to breeding research and programs to further improve their small herds. Budget guidelines to generate greater income from small-scale swine and sheep operations were suggested.

Forage production complements NER livestock and dairy operations. Research focusing on improved dairy feeding programs that utilize more farm-produced roughage and silage should be investigated. Also, research to develop quick curing systems for hay is needed. Small farms operators require more efficient, lower cost systems for producing forage crops. Research on small-scale pasture renovations and the elimination of undesirable weeds in hay fields and pastures was also suggested.

Management

Small farms operators need to be encouraged to scrutinize their own particular operations. Their managing abilities vary considerably because many are part-time or new farmers. They should learn always to view and manage all aspects of aggregate farm enterprise operations. They need specific research on manure disposal in urban or suburban areas, planning alternative and high value crops, more simplified recordkeeping procedures, financial and credit alternatives, pricing mechanisms and approaches, feasibility of part-time work, and systems for managing small woodlots as a renewable resource asset.

Marketing

Most research suggestions on marketing related to the need for small farms to engage in direct marketing, particularly of vegetables and fruits. Research is needed to determine where a small farms operator can sell his produce at the highest return. He cannot sell to chainstores since they do not handle small quantities. Research should be aimed at modifying this situation. Also, perhaps new markets could be developed in areas where major retail outlets are not concentrated. There could be neighborhood markets, where small-scale farmers could sell from their own trucks or where distant farmers could unitize their respective production on one truck and take it to a central location. Possibly 10 to 20 small producers working cooperatively could develop these kinds of new market outlets. There are many low income areas where there are large populations with minimum transportation. Also major centers of commerce, such as industrial plants and office buildings, offer an excellent opportunity for small-scale fruit and vegetable growers to directly market their produce. Minimum facilities would be required; a place to park trucks would be sufficient.

Research efforts to enhance the quality, flavor, and eye appeal of direct marketed produce should be expanded. Current and expected economic conditions may require still more small-scale produce farmers to engage in central outlets and farmers markets. As these outlets expand, the quality of offered products will need to be improved to consummate maximum sales opportunities.

Economics

Economic research stems from the realization that most small farms operators now need greater income. They are confronted by two basic premises: Lower their total input costs or increase the income-generating capabilities of the enterprise or both. Research in economics should be focused on practical well-written budgets to assist small farms operators in decisionmaking. Economic studies of selected NER small farm enterprises would determine the most profitable ones. Costs-and-returns research studies were suggested, such as small farms alternate employment opportunities, the leasing of equipment for custom work, and the pooling of crop production to generate central market outlets. All implemented economic research studies should be carefully designed to consider the limited credit, cash flow, and labor that small farms operators must work with.

Disease and Pest Control

Immediate research aimed at diseases and pests of small farms centered primarily on horticultural and forage crops. Two research suggestions emphasized the need for more workable methods to control flies and pinkeye disease of livestock. Multiflora rose is a weed problem in pastures and woodlots, and cheap effective methods of irradicating this pest are needed. Low cost repellents or other effective methods should be developed to combat the increasing problem of deer in many areas of agricultural production, such as forage, grain, fruit, and vegetable crops. This research need is centered in West Virginia, Maryland, and Pennsylvania.

Research should be undertaken to investigate the use of plastic mulching plus drip irrigation to control weeds, insects, and diseases of vegetable and fruit crops. This could be done by injecting the proper chemicals into the system at the right time and applying the appropriate quantities to eliminate major pests. Although plastic mulches plus soil fumigants increase yields of vegetable crops, other materials and methods should be researched that would provide a safe minimum labor and economical pest-control system for the small farms producer. Research is needed to work out the systems and rates and to obtain the necessary residue information for EPA's acceptance of these new methods of chemical application to vegetable, berry, and tree fruit crops.

Equipment

Equipment needs of small-scale farms are presently not adequately fulfilled by industry. Some equipment manufacturers have begun to focus on small-scale agricultural enterprise systems. Until recently, most machinery or equipment produced has been to supply suburban dwellers' needs, including small power units of about 8-14 hp with supportive accessory equipment, such as rotary grass cutters, snow blowers, and blades. The equipment is very expensive and generally is not satisfactory for the special needs of most small farms.

Respondents suggested appropriate, more versatile, and less expensive machinery and equipment for small farms. Research should be focused on designing smaller accessory equipment that is less sophisticated and that

could be used with most current large farm tools. Tillage and forage are areas of immediate need.

Quality and Preservation

The two suggestions relative to quality and preservation research involved quality maintenance of crops and foods harvested and their partial processing by the small farms operator prior to marketing.

Energy

Immediate research on energy surprisingly was only suggested twice. The specific research mentioned was vague. It included increased energy efficiency use and more applied energy technology.

Other

Specific research needs designated other were virtually unrelated. Suggestions were cooperative organizations, organic farming, tax relief for farmers, credit availability, reclaiming old fields, community development, and fertilizer substitutes.

In Summary.--Immediate research efforts to enhance NER small farms should focus on production, management, and marketing. Specifically, the research should be aimed at assisting small farms operators who have established commodity mixes and have limited resources of land, capital, and labor. Impacting on many current small farms business operations is the owners' inept managing ability to modify or adjust their marketing methods to new outlets. Current economic conditions are causing hardships for some operators and future economic situations are not expected to soften; therefore, small farms operators will come under intense financial pressure for new gross income during the next few years. To survive, they will need immediate and specific research on methods and systems enabling them to realize greater returns on owned or controlled assets.

TECHNOLOGY NEEDED TO ENHANCE 1984 SMALL FARMS

Demand for agricultural technology by small farms operators is likely to increase in the near future. Rapidly rising costs and other negative factors are major concerns and will be the driving force behind increased technology transfer to small-scale agricultural units. Compounding the problem further is the negative outlook for small farms income in the years ahead. Income will not increase unless small farms operators take a more direct role in marketing procedures and also modify and adopt new production and management systems.

Respondents were asked to describe new technology that would enhance the small farms in their particular county in 1984. Sixty-five of the seventy respondents offered 105 suggestions, with 5 not replying (table 8). The suggestions were interpreted and eight general areas of technological need were identified.

Table 8.--Interpreted respondents' suggestions for technology needed in general areas to enhance 1984 NER small farms

Technology needed in--	Suggestions	
	Number	Percent
Equipment	24	22.9
Energy	18	17.1
Production	18	17.1
Marketing	12	11.4
Management	12	11.4
Disease and pest control	7	6.7
Quality and preservation	5	4.8
Economics	4	3.8
Other	5	4.8
Total	105	100.0

Technology in the future should be focused on the special equipment needs of small farms. Nearly 23 percent of the aggregate suggestions indicated small farms operators in the future will need a variety of functional equipment for their small acreages. Many of the suggestions implied that much of the farm equipment now on the market is not applicable for small-scale agriculture, and high costs make it prohibitive to most small farms operators. Specific equipment technology suggested pertained to walk-behind tractors, economical mechanical livestock feeding systems, small-scale mechanical tree fruit harvesters, improved and fuel-efficient maple tree sap evaporators, and mechanical methods to apply lime and fertilizer economically on hillside pastures. Underlying most of the suggestions was the need for technology focusing on smaller, more durable, multipurpose machinery and equipment that would be economical to operate.

The continuing escalation of energy costs is a major concern of small farms operators. Energy was suggested 18 times or 17.1 percent by the respondents as an area where more technology will be required. New technology should focus on energy production by the small farms operation for self-sufficiency and reduced energy requirements. Systems utilizing a minimum of fossil fuels should be exploited. Energy production from methane gas and alcohol from waste products generated on the farm as well as increased efforts to utilize forest products, wind, and sun as energy sources were most frequently suggested. Any technology leading to new breakthroughs in energy efficiency on small farms will not only lower production costs but enhance the future well-being of the national economy.

Suggestions emphasizing new technology in the area of production were mentioned 18 times or 17.1 percent and generally related to horticulture or forage and livestock production practices. One respondent indicated that many small farms operators in his county have moved on to become commercial farmers as new technologies were introduced into their farming operations. Respondents were concerned about efficient food production and how to maximize the use of small land areas for raising food crops. Future technology in horticultural production should focus on how small farms operators can achieve greater yields with less inputs, multiple crops yearly, companion crops, new winter cover crops, use of plastic greenhouses and soilless media to produce vegetable plants and crops, mulching systems, drip irrigation with slow release of NPK fertilizers through the drip irrigation systems, and development of new or improved plants to better fulfill the special needs of small farms vegetable growers. Further, new simpler techniques in growing fruits and vegetables will be necessary as energy, labor, and tight money problems continue to confront small farms operations in the future.

Production technology suggested for small-scale forage and livestock enterprises included better agronomy practices, such as pasture improvement and silage-making capabilities on small farms. Also mentioned were alternative forage crop systems for marginal lands and cutover or permanent woodlots. Technology to improve breeding and feeding programs for small farms livestock producers was also mentioned.

Marketing and managing technology were both suggested 12 times or 11.4 percent each. They are closely related and dependent on each other. Marketing know-how is a function of good management. Respondents emphasized the need for more work on direct marketing by small farms managers to multiply their sales volume from limited acreages. New technology on supply and marketing procedures would give small farms managers more purchasing power and greater marketing flexibility.

Management suggestions related to easy access by small farms operators of recorded or computerized information made available at more educational centers, such as libraries. Examples of managers' needs are computer programs scaled to small farms needs to identify economical livestock feed rationing formulations and alternative enterprise selection determined by profitability of the enterprise. Small farms managers in the future will be dependent on more custom work and they will rent equipment to reduce capital commitments. Some managers will need to devise new contract systems to facilitate long-term leases of 5 years or more from absentee landowners to assure benefits from not only the crop harvested yearly but likewise the value of lime and fertilizer applications recovered in future crops over time. Perhaps one respondent said it best: "Small farmers will need new technology to be more efficient, time and money management capabilities and the opportunity to market every item of fruits and vegetables produced on their limited acreage resource base."

Technology aimed to reduce small farms dependence on chemicals for control of plant and animal diseases and pests was suggested seven times or 6.7 percent. Although biological insect control is new, a major thrust of the Department, small farms operators will need new all-purpose insecticides as

well as new multipurpose herbicides. Smaller more durable packages or containers than current types need to be developed.

Quality and preservation technology suggestions were mentioned five times or 4.8 percent by the respondents. Techniques need to be developed to treat manures and other offensive agricultural odors so that "city-people" who are neighbors of urban farmers are not offended. Likewise, more use of organic fertilizers should be investigated and waste residues of urban centers, i.e., sludge and garbage. Technology research should be expanded on protein substitutes. General or basic systems for low cost on-farm processing and storage of plant and animal products need to be investigated. Poultry meat preservation was specifically mentioned. In the future, it will be critically important for small farms operators to maintain and preserve all their production.

Suggestions relative to economics were cited four times or 3.8 percent. They concerned the need to design budgets and programs on finance, production, and marketing systems that are functional to computers on the small farms.

Other technology was cited five times or 4.8 percent. The suggestions were diverse and unrelated.

In Summary.--Small farms operators 5 years from now will require machinery and other mechanical devices to operate their farms more intensely. They will need to maximize utility from every item grown or produced. It will be essential that on-the-farm energy sources be developed for small farms and that they be practical for the farm business. On-farm production systems will be more complex and sophisticated. To survive, NER horticultural small farms will most likely have to diversify and produce many different fruit and vegetable varieties. Partial processing of commodities on the farm will increase as farm operators are forced to partially process mature crops to enable marketing later at distant sites. Economics of scale will be practiced by efficient and effective small farms managers by utilizing all forms of new, specialized, small-scale technology.

SUGGESTIONS FOR FUTURE EFFECTIVE RESEARCH AND EXTENSION ROLES

AR with its vast reservoir of scientific expertise is one of the research arms of SEA. ES and its ubiquitous force of county agents is the SEA educator. Under the umbrella of SEA, these two factions with Cooperative Research have a unique opportunity to combine resources and individual talents to resolve a national issue--to strengthen and make the small farm a viable segment of American agriculture.

The respondents in the survey were asked to suggest ways that ES and AR could ultimately be more effective in fulfilling the needs of small farms operators. Again, the question was open ended; therefore, the suggestions were appraised and grouped into eight broad recommendation categories. Sixty-seven of the seventy respondents made suggestions; three did not answer.

When I interpreted the suggestions for classification into the appropriate category, it became evident that practically all pertained to the ES county agents' role. They know the current and future needs of small-scale agriculturalists, and likewise they know that many are not reached by anyone. These agents have suggested several ways that the small farms operator can be reached by ES. They also know that they can have a vital role in planning research programs with AR that will have an effective impact on small farms. Further, ES as a partner of AR can disseminate the needed research through its vast, well-established educational system, although it, too, realizes new educational and training programs must be undertaken.

The 67 respondents made 106 suggestions, which are grouped by category (table 9).

Table 9.--Interpreted respondents' suggestions as recommendations for effective research and extension roles1/

Recommendation categories	Suggestions	
	Number	Percent
Contacts or aggressive outreach----------	27	25.5
Improved information systems----------	19	17.9
Economic studies and guidelines----------	13	12.3
Education and training----------	12	11.3
More involvement of small farm operators---	12	11.3
Agrifarm organizations established---------	8	7.5
Identify and rectify the needs----------	8	7.5
Other----------	7	6.6
Total----------	106	99.9

1/ For suggestions by recommendation categories, see Appendixes A-G.

Contacts or Aggressive Outreach (25.5 Percent)

The most frequently suggested recommendation was contacts or aggressive outreach. Respondents emphasized the need for more personal contacts on a one-to-one basis with small farms operators. Often small farms families are reluctant to solicit assistance from the county agent because of their low economic status within the aggregate farm community of the county. They may not know how to contact the extension office, or perhaps they know how but have never made the contact. Many remain bitter or skeptical toward all county extension personnel. A county agent can contact only so many farm or agricultural business people. Historically, large or commercial farms have

often received first contact priorities, the latter not always the choice of the extension personnel. Generally subtle pressure by factors outside the county extension office forced this direction. Respondents recognize the need for a unified, more aggressive outreach effort to help small farmers adopt current, old, and new agricultural practices (Appendix A).

Improved Information Systems (17.9 Percent)

The small farm segment of our agricultural industry is hard to reach by conventional approaches. Field days and countywide meetings attended by those from large or commercial farms are generally not attended by small farms operators. New information systems must be tried to reach this special segment of the agricultural community. Demonstrations focusing on small-scale agricultural enterprises, in-county tours to successful small farms, and more basic, pictorial-type, or general publications are but a few of the suggestions. Time and costs associated with travel are a major concern; therefore, information distribution and more efficient communication systems are of paramount importance (Appendix B).

Economic Studies and Guidelines (12.3 Percent)

Respondents indicated that economics and application of its principles for guidelines are an important consideration. With rapidly escalating costs confronting farmers and new marketing options available for some small-scale farming enterprises, a close watch must be kept on economic systems or alternative practices that will maximize returns. In the future, more energy and capital shortages will be encountered. Some small-scale operators now engaged in monoculture agriculture will turn to diversified or multicrop systems. Guidelines or factual documents need to be developed that give expected costs and returns for selected crops most unique for small-scale operators (Appendix C).

Education and Training (11.3 Percent)

Respondents' suggestions on this topic imply that small-scale operators need pilot or working small farms where they can view innovative and appropriate technology for small-scale agriculture. Combined efforts of ES and AR would be more effective if the amount of applied research relevant to small operators was increased. Achievements of AR would be demonstrated by ES county agents funded by minigrants of $500 to $2,500 for materials and equipment to run small enterprises--applied research projects. The small-scale projects could be duplicated in various counties of any State or in other NER State counties. The impact would be substantial and the aggregate costs minimum. This educational system would provide on-the-site training via involvement and observation of area small farms operators. Special education and training programs are also needed by some ES agents, who apparently find that it is difficult to deal and cope with small farms operators in their county (Appendix D).

More Involvement of Small Farms Operators (11.3 Percent)

It is suggested that ES and AR collect information from not only successful but unsuccessful small farmers. Further, extension county agents should make a concerted effort to investigate the special needs of these small farms operators and make the identified needs available to the researchers for prompt investigation. In turn, research achievements and knowledge would be made available to the extension county agents for transmittal and distribution to all small farms operators (Appendix E).

Other Categories (6.6 Percent)

It was suggested eight times to establish agrifarm organizations and identify and rectify immediate needs. Appendixes F and G, respectively, include the suggestions alluding to these categories.

Seven suggestions were categorized as other because of diverse or unrelated content.

In Summary.--ES and AR need to become more involved and utilize each other's contacts and unique attributes. The success of new research discoveries being quickly absorbed and innovated into use to benefit small farms can best be accomplished by ES; however, new educational systems need to be implemented immediately.

APPENDIX A

CONTACTS OR AGGRESSIVE OUTREACH

"We need additional workers in the Field to make personal contacts."

"Once increased research relating to small farms is available, Extension can intensify its efforts in working directly with small farm operators. Additional resources in Extension should be used to work with small farmers on a one-to-one basis and in small groups."

"Ten years ago I was generally critical of Extension because we did not cater to small or part-time farmers. We are just beginning to help them. We need more generalistic like the old-type county agents--especially in our urban-suburban counties. This group of small-time farmers are getting very loud and demanding. These small operators are more demanding of my time now than ever before. They take more time to service than full-time large operators. There are more small timers and their numbers are increasing rapidly. Local Extension Service needs more personnel to handle the demands."

"Some small farmers are bitter. On a one-to-one basis, small farmers will accept and respond."

"In Extension we need more manpower because 1,000 small farms take 10 times longer to service than 100 large farms and probably longer, since many small farmers are starting from scratch."

"Most of the techniques known today in production and marketing can benefit small farms. A more aggressive outreach to help small farmers adopt current practices or relearn some old practices could help."

"Feel free to work with them - don't ostracize them."

"Need more paraprofessional staff to conduct one-on-one contact with small commercial dairy farmers."

"We'll need more Extension personnel as they usually have to be worked with on one-to-one basis."

"Setting aside 1 day per week or month and visit specifically small farmers. Have programs designed for small farmers, maybe something like an under 50 cow club. Mini tours, 1 day 'in county' tours."

"Personal contact with them--discussing their problems."

"The big problem at present is reaching them and then getting them to follow accepted practices. After this is accomplished, helping them keep up with inflation will be the problem."

"By making farm visits. Keeping abreast of farmers and then getting the research answers back to farmers."

"Get out and visit them. Provide assistance on an individual basis, if we can, which means additional resources."

"Develop programs for 1-to-1 help and information."

"Hire some more staff members to do 'on farm visiting.'"

"Through the use of paraprofessionals on a 1-to-1 basis."

APPENDIX B

IMPROVED INFORMATION SYSTEMS

"We need simple, practical, and easy to follow guidelines. They don't have a lot of equipment or enough time to do a real complete job."

"By making them better aware of present services and programs available."

"It is important for Extension to keep small farmers up to date on spray schedules, insect watches, etc. This is often a real challenge since most part-time farmers have very little extra time."

"Provide resource materials for their meetings and demonstrations."

"By making available a practical means of production and marketing which will and can help the small farm."

"Extension must make the general-type bulletins more available."

"We need ample supplies of already available publications and a few new ones dealing with small farm marketing and pest control to name two topics."

"Improve information systems; TV, mass media, better publications that are more pictorial; (this population does not come looking; we must seek them out - they are very skeptical; however, they will respond if contacted at their level)."

"Many of our small farms are hobby farms and really do not fit the definition based on income. However, many of these people need basic how-to information."

"In our area, the move is toward part-time farming--not commercial farming. The small farm enterprise must be given more emphasis. Resources of the Land Grant University, Extension, and Research must be redistributed to meet the present needs. We need more backstopping in the area of small farm operations. In this region of the State people are moving in and buying up small tracts of land to produce their own food and heat their homes with the available wood. Many people are rushing into the farming business without adequate information. Some quickly run into financial problems. As energy becomes more costly, more people go to wood-burning stoves--we see a trend toward poor woodlot management practices. We must address ourselves to these problems and need the resources to do so."

"Tailor certain schools, demonstrations, letters for beginners; they feel inferior among top farmers dealing with advanced technology."

"Many small farmers do not participate in the regional or even countywide meetings and field days that our larger farmers attend. In order to reach these folks we have to develop programs, perhaps similar to the TVA farm program, where the research is applied in or near the communities where they live. It's one of the oldest techniques used in Extension, but it seems to be the best way, perhaps the only way, to make any real progress with this audience."

"Mass media and more visual material for meetings."

APPENDIX C

ECONOMIC STUDIES AND GUIDELINES

"We need to stress the importance of adequate capitalization, low cost per unit of production, low expected dollar returns per acre, etc. I sometimes feel that we are actually encouraging people to move into unsound areas. People have to realize that a net of $1,000 per acre for vegetables is tops. We need to promote realistic goals."

"Research probably needs to put more effort into breeding of new varieties suited to local environmental conditions and pest problems. Government-initiated biological-control projects are, of course, helpful to the small farmer when carried out on an areawide basis."

"A close watch must be kept on the costs of the various inputs for small farm production and those which are the greatest should be researched to find alternatives and give the maximum amount of options to the small farmer."

"Help design marketing techniques to group products from various farms together for effective market clout."

"We need to reassess the combinations of enterprises that might be profitable to small farmers."

"In our county the number of dairy farms will, no doubt, continue to drop, but I feel this is a great potential for sheep, poultry, fruits, and vegetables. There is some growing interest in these enterprises, but unless we can make greater progress, more and more of our land will go into nonfarm use. Combined efforts to meet the greatest needs are financial management, production technology, and marketing in respect to small farm enterprises."

"Help them to better utilize their resources to produce more products with less labor, time, and costs."

APPENDIX D

EDUCATION AND TRAINING

"Educational programs should be geared to both commercial and small farm needs. Twilight and Saturday meetings should be considered for part-time farmers. Hands-on workshops, tours, and demonstrations are important."

"Assist in planning educational activities."

"We should direct more actual workshops to small farmers and first-time farmers. Workshops should be basic agricultural techniques."

"We could be more effective by increasing the amount of applied research which we could do with small operators. Funds should be made available for applied research projects which would enable an agent to set up demonstrations on farms to get new practices started."

"We need to teach repairing and rebuilding old equipment."

"I am quite capable of working with upper middle class, middle class, and lower middle class, but am having a difficult time with the very few low income farmers I work with. How are they to compete when most all the present ways to improve forage production--plowing, reseeding, weed control, fertilization--cost money, . . . lots of it."

"Design educational programs and information specifically for small farmers."

"By establishing several pilot or working farms where innovative and appropriate technology is in use and publicized enough to be made available to the other farmers."

"The big challenge is marketing knowledge--most of the new small producers don't know how--we should teach marketing skills."

APPENDIX E

MORE INVOLVEMENT OF SMALL FARM OPERATORS

"Plan conferences to listen to small farmers and their problems and respond accordingly."

"Communicate the needs of small farm operators to research and the results of research to Extension Service to small farmers."

"More encouragement from State and Federal policymakers to pay attention to this group. Encourage them to be (1) identified and (2) encouraged specifi-

cally to join in ongoing activities and to provide specific activities for them."

"Become more aware of their needs and relate to those needs more effectively."

"We need to pay more attention to the needs of small farmers when we design equipment, buildings, management system, etc. It's only recently that we have begun to receive information that pertains to more than the large farmer."

"Try to consider their needs when developing programs."

"By gathering more data directly from them."

"Working closely with local small farm operators. A full circle - feed and need - update current trends on technology and learn what's happening or needed by small farm operators."

APPENDIX F

AGRIFARM ORGANIZATIONS ESTABLISHED

"Have general agricultural agents with some practical experience work with small farm families to involve them on Extension councils; to organize into small farm associations for education and cooperative efforts."

"Reestablish self-help community Ag groups."

"By increasing cooperation (both in purchasing and marketing)."

"Establish co-ops."

"Try to keep operators informed on cost cutting practices, more use of cooperative buying and selling, converting to more intensive sources of income, and helping to provide off-the-farm employment to supplement their incomes."

"Farm organizations - cooperatives, etc."

"Help small farmers to obtain needed supplies and other inputs at cost of no greater than large producers pay. Also same on selling of agricultural products. The small producer is always at a disadvantage in buying and selling."

APPENDIX G

IDENTIFY AND RECTIFY THE NEEDS

"We should all bone up on finding the reasons why (such as unfair zoning regulations!) farmers are being forced to sell their farms or go out of business and apply our research and ideas before it is too late and the farmers are gone."

"Communicate with them and help identify and solve their problems."

"As I see it, high value crops are the answer to more return per acre on small farms. However, this requires hand labor. At the present time there is too much red tape, Federal regulations, health regulations, and housing regulations. This hassle will soon discourage anyone who is operating on a limited budget. Something should be done to deregulate labor laws and make it easier to hire hand labor (forgot to mention all the paperwork)."

"Most small operators cannot afford the equipment to do a good job on a small acreage. The fixed cost is too high to make the operators profitable. Thus, they rely on used equipment, usually in poor operating condition, which does not do a good job. Some do not have the technical know-how or the motivation to do an efficient topnotch job and are satisfied to take whatever return they get. I feel that most technology in the production area that enhances commercial farm operations can trickle down and be applicable to small farms, also. Smaller package size of some pesticides would help some operators who do not have the need for 5-gallon or larger containers."

"Bigger is not always better. Many of these small farms will continue to be part-time operations. We need to gear programs accordingly."

"From 30 years' field experience I strongly feel that there is nothing wrong with getting outside work in a small farm setting. This current idea of going back to subsistence farming is ill-advised. I grew up on one! The mortgage equaled one-half of assets when the farm was sold. Most small farmers are part time. Their number one source of income is an outside job."

"More jobs to help get some farmers off the land."

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